



EMC Test Data

Client:	Symbol Technologies	Job Number:	J65981
Model:	CB3000	Test-Log Number:	T66007
		Project Manager:	Sheareen
Contact:	Alan Parrish		
Emissions Spec:	FCC 15.401	Class:	Radio
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Symbol Technologies

Model

CB3000

Date of Last Test: 11/8/2006



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EUT INFORMATION

The following information was collected during the test sessions(s).

General Description

The EUT is a Wireless bridge router that is designed to provide wireless internet and network service. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120 Volts , 60 Hz, 1 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Symbol Technology	CB3000	wireless bridge router	6146529900788	H9PCB3000

Other EUT Details

None

EUT Antenna (Intentional Radiators Only)

The antenna connects to the EUT via a non-standard reverse polarity antenna connector, thereby meeting the requirements of FCC 15.203.

EUT Enclosure

The EUT enclosure is primarily constructed of plastic . It measures approximately 17.5 cm wide by 10 cm deep by 3 cm high.

Modification History

Mod. #	Test	Date	Modification
1			
2			
3			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



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Immunity Spec:	-	Environment:	-

Test Configuration #1

The following information was collected during the test sessions(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	PP01L	Laptop	01014	DoC
Epson	740	Printer	A6R1320291	-

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None	-	-	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop	Cat5	Unshielded	1.0
AC Power	AC Mains	Multiwire	Unshielded	1.8
RF	Antenna	-	-	-

EUT Operation During Radio Tests

EUT was set to transmit at maximum power at 6Mbps on channels 5500, 5600, and 5700 MHz.

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Contact: Alan Parrish	
Spec: FCC 15.401	Class: N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform engineering evaluation testing of the EUT with respect to the specification listed above.

Date of Test: 11/7/2006	Config. Used: 1
Test Engineer: Mehran Birgani	Config Change: None
Test Location: Chamber #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 18 °C
 Rel. Humidity: 44 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	RE, 30 - 18000 MHz Spurious Emissions	FCC Part 15.407 RSS 210	Pass	24.3dBµV/m (16.4µV/m) @ 1327.8MHz (-29.7dB)

Modifications Made During Testing:

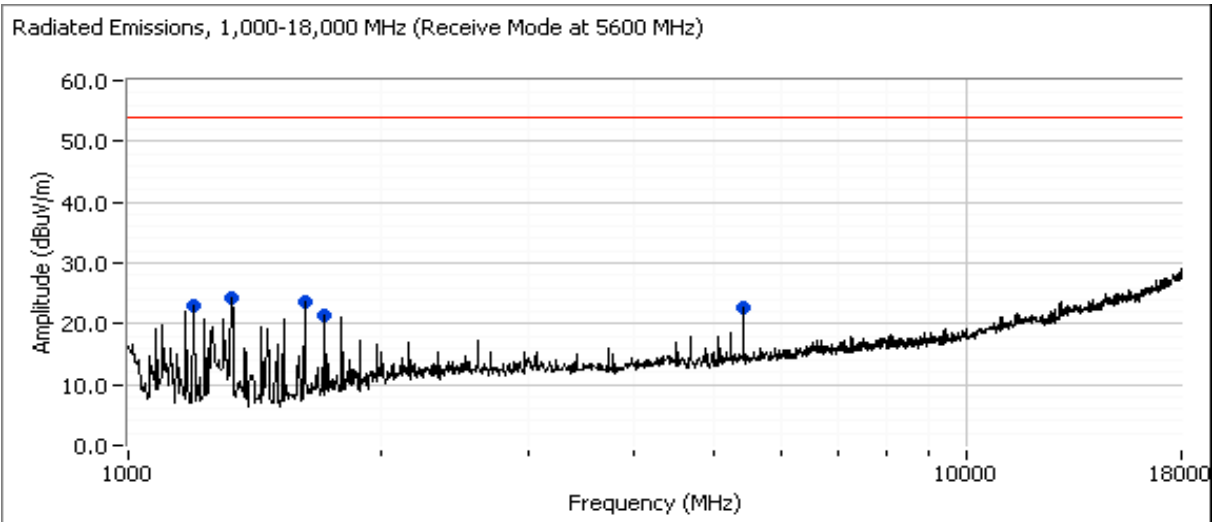
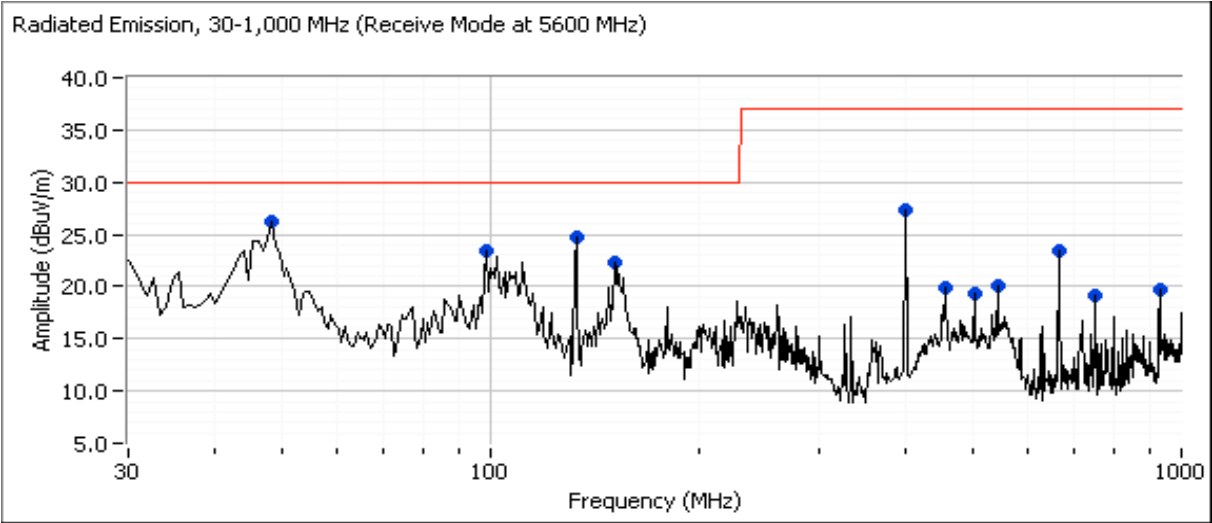
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: Symbol Technologies	Job Number: J65981
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Contact: Alan Parrish	Account Manager: Sheareen
Spec: FCC 15.401	Class: N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz. Receive Mode, Center Channel @ 5600 MHz





EMC Test Data

Client: Symbol Technologies	Job Number: J65981
Model: CB3000	T-Log Number: T66007
	Account Manager: Sheareen
Contact: Alan Parrish	
Spec: FCC 15.401	Class: N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz. Receive Mode, Center Channel @ 5600 MHz

Frequency MHz	Level dB μ V/m	Pol V/H	15.407 / RSS 210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1327.750	24.3	V	54.0	-29.7	Peak	58	1.7	
1622.250	23.5	H	54.0	-30.5	Peak	196	1.7	
1199.500	23.1	V	54.0	-30.9	Peak	5	1.7	
5402.000	22.7	V	54.0	-31.3	Peak	251	1.7	
1712.500	21.5	H	54.0	-32.5	Peak	210	1.7	
47.811	26.3	V	30.0	-3.7	Peak	106	1.7	
132.871	24.7	V	30.0	-5.3	Peak	91	1.7	
98.396	23.5	V	30.0	-6.5	Peak	45	1.7	
150.283	22.3	H	30.0	-7.7	Peak	164	1.7	
398.637	27.4	H	37.0	-9.6	Peak	119	1.7	
666.016	23.4	V	37.0	-13.6	Peak	50	1.7	
540.007	20.0	V	37.0	-17.0	Peak	85	1.7	
455.030	19.9	V	37.0	-17.1	Peak	298	1.7	
930.812	19.8	V	37.0	-17.2	Peak	3	1.7	
500.006	19.3	V	37.0	-17.7	Peak	231	1.7	
750.090	19.2	V	37.0	-17.8	Peak	176	1.7	

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Contact: Alan Parrish	
Spec: FCC 15.401	Class: N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 11/7/2006	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 17 °C
 Rel. Humidity: 82 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - c	RE, 30 - 40,000 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	42.5dBµV/m (133.4µV/m) @ 17098.6MHz (-11.5dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



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Contact: Alan Parrish	
Spec: FCC 15.401	Class: N/A

Run #1a: Radiated Spurious Emissions, 30 - 40000 MHz. Low Channel @ 5500 MHz

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10990.33	37.5	V	54.0	-16.5	AVG	328	1.0	
10990.33	49.3	V	74.0	-24.7	PK	328	1.0	
16498.64	39.3	V	54.0	-14.7	AVG	49	1.9	
16498.64	50.7	V	74.0	-23.3	PK	49	1.9	
10999.33	37.1	H	54.0	-16.9	AVG	143	1.0	
10999.33	48.8	H	74.0	-25.2	PK	143	1.0	
16500.12	39.1	H	54.0	-14.9	AVG	54	1.0	
16500.12	50.3	H	74.0	-23.7	PK	54	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (~68dBuV/m).

Run #1b: Radiated Spurious Emissions, 30 - 40000 MHz. Center Channel @ 5600 MHz

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11201.38	37.5	H	54.0	-16.5	AVG	0	1.0	
11201.38	49.6	H	74.0	-24.4	PK	0	1.0	
16798.63	40.4	H	54.0	-13.6	AVG	155	1.0	
16798.63	51.9	H	74.0	-22.1	PK	155	1.0	
11200.60	37.5	V	54.0	-16.5	AVG	0	1.2	
11200.60	49.0	V	74.0	-25.0	PK	0	1.2	
16801.37	40.2	V	54.0	-13.8	AVG	103	1.0	
16801.37	51.5	V	74.0	-22.5	PK	103	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (~68dBuV/m).



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Run #1c: Radiated Spurious Emissions, 30 - 40000 MHz. High Channel @ 5700 MHz

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
17098.56	42.5	H	54.0	-11.5	AVG	69	1.0	
17098.92	42.4	V	54.0	-11.6	AVG	360	1.4	
11400.41	38.1	V	54.0	-15.9	AVG	266	1.0	
11399.87	38.1	H	54.0	-15.9	AVG	254	1.0	
17098.56	54.0	H	74.0	-20.0	PK	69	1.0	
17098.92	53.6	V	74.0	-20.4	PK	360	1.4	
11400.41	50.3	V	74.0	-23.7	PK	266	1.0	
11399.87	50.2	H	74.0	-23.8	PK	254	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (~68dBuV/m).



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Standard: FCC 15.401	Class: N/A

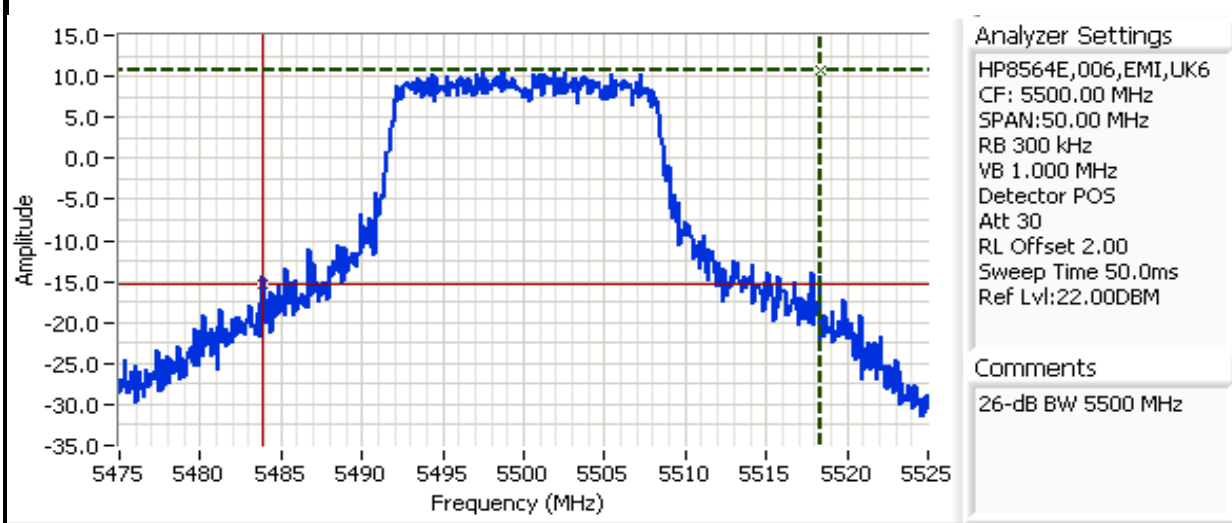
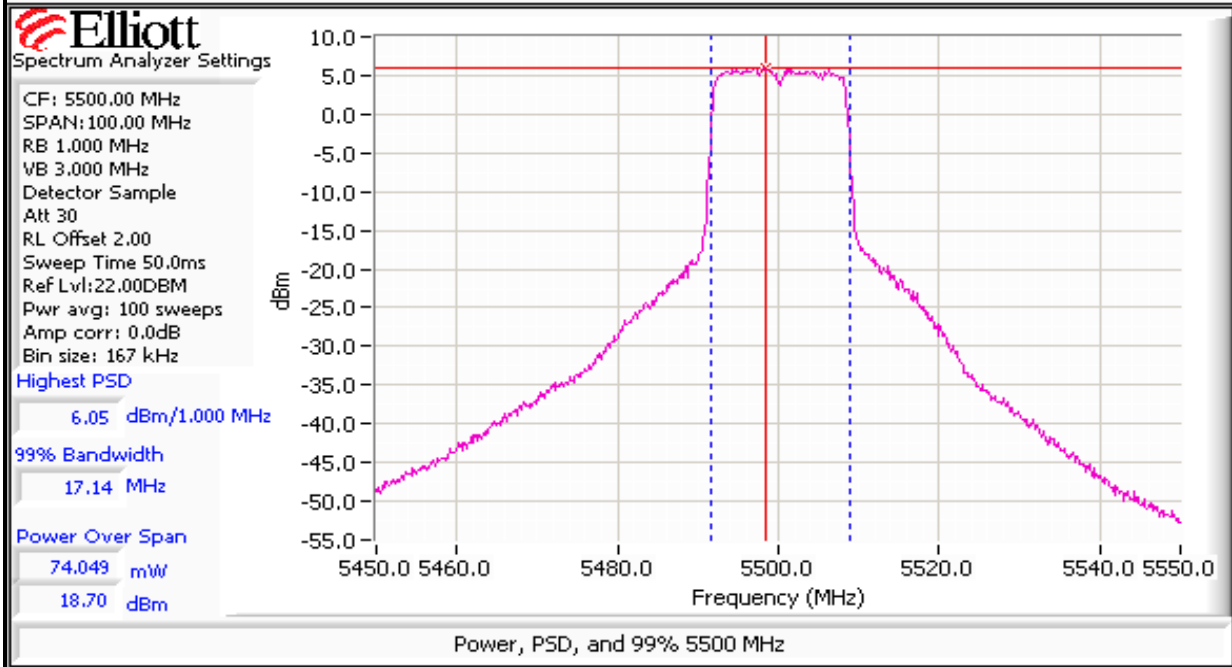
Run #1: Bandwidth, Output Power and Power spectral Density

Antenna Gain: 4 dBi

Frequency (MHz)	Software Setting	Bandwidth		Output Power ¹ dBm		Power (Watts)	PSD ² dBm/MHz			Result
		26dB	99% ⁴	Measured	Limit		Measured	FCC Limit	RSS Limit ³	
5500	22.0	34.4	17.1	18.7	24.0	0.074	6.05	11.0	9.4	Pass
5600	22.0	34.5	17.5	19.7	24.0	0.094	7.14	11.0	10.3	Pass
5700	22.0	38.5	17.8	19.7	24.0	0.094	7.12	11.0	10.2	Pass

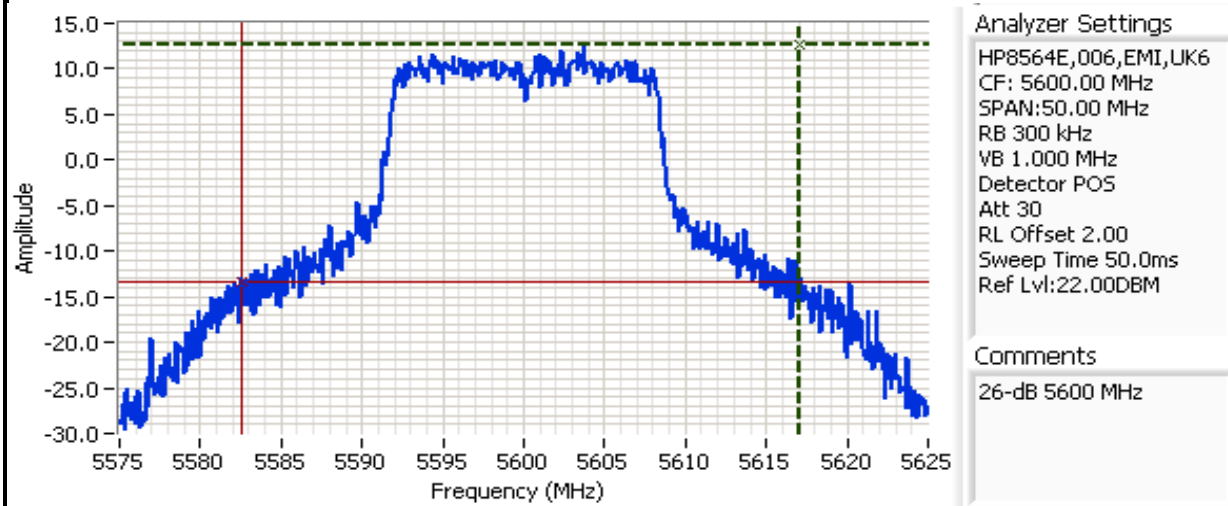
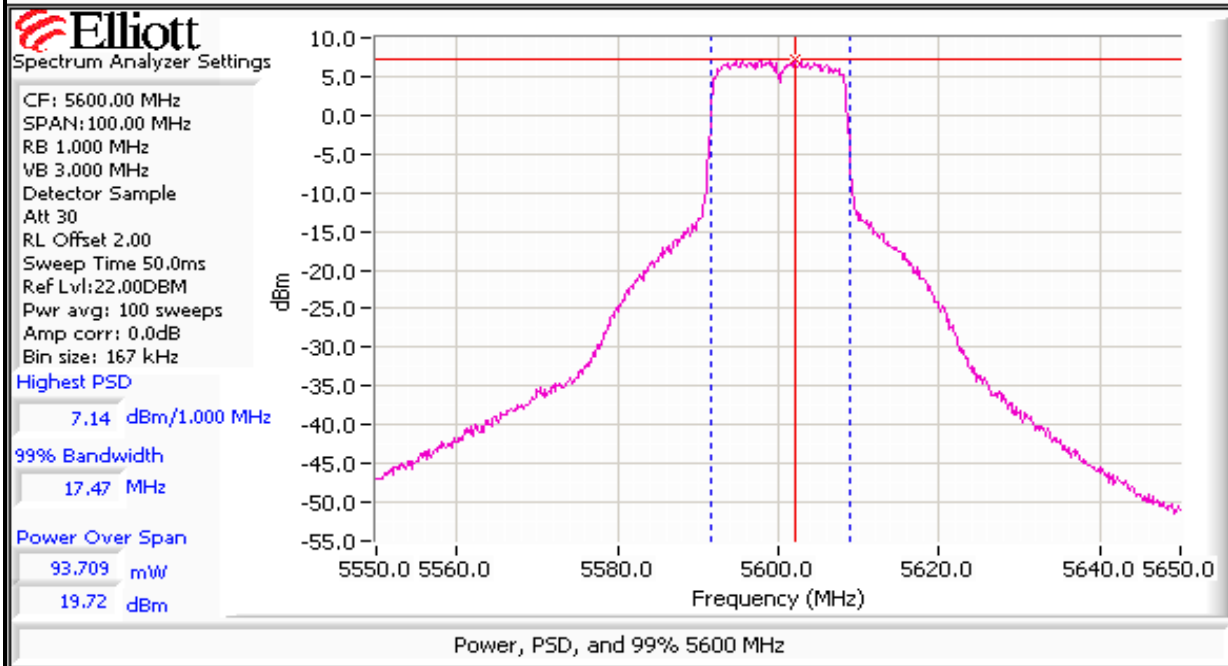
- Note 1: Output power measured using a spectrum analyzer (see plots below):
RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 100 MHz
- Note 2: Measured using the same analyzer settings used for output power.
- Note 3: For RSS210 the measured value of the PSD (see note 3) must not exceed the average value (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB.
- Note 4: 99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB

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Cursor 1	5518.33	10.67		Delta Freq.	34.42	
Cursor 2	5483.91	-15.33		Delta Amplitude	26.00	

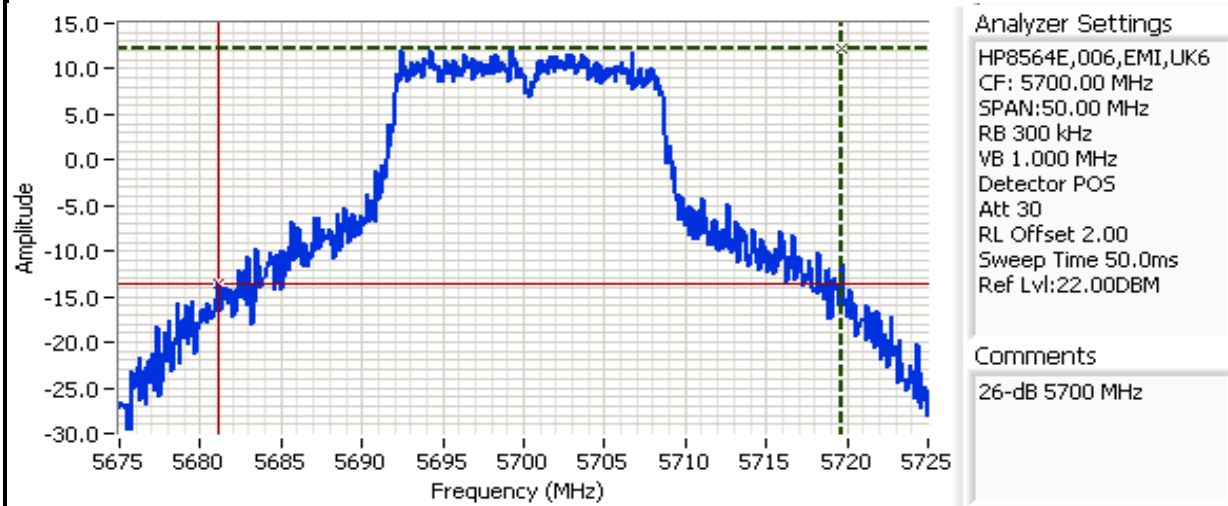
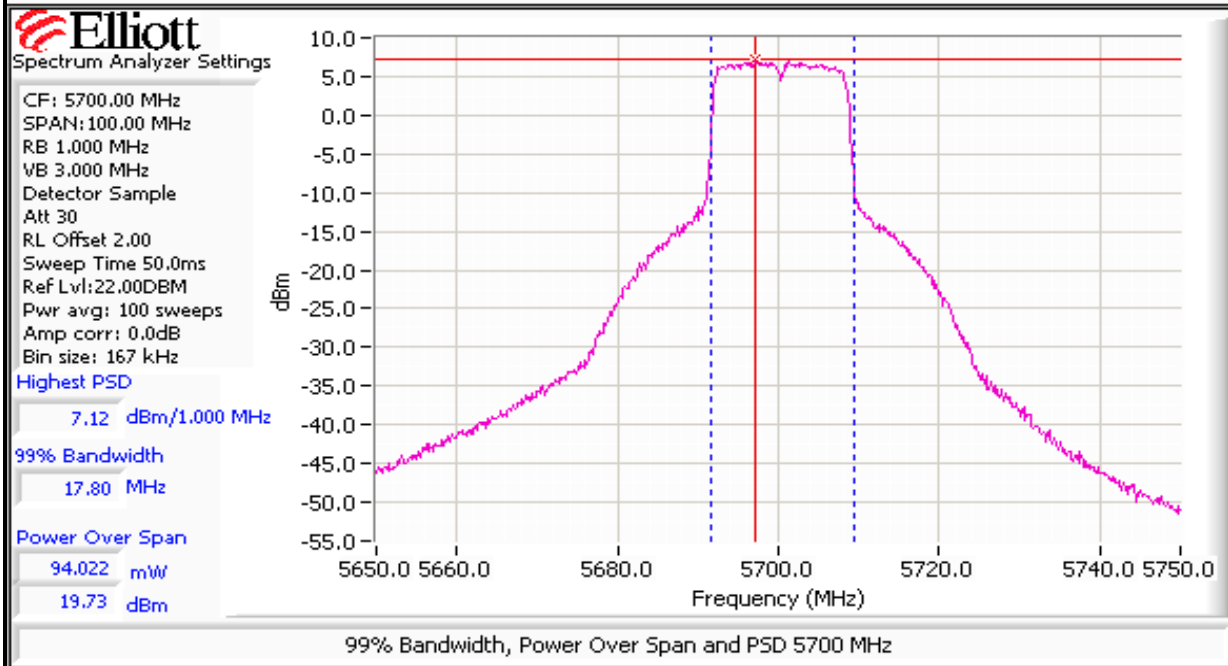
Client: Symbol Technologies	Job Number: J65981
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Cursor 1 5617.08: 12.67 Delta Freq. 34.50

Cursor 2 5582.58: -13.33 Delta Amplitude 26.00

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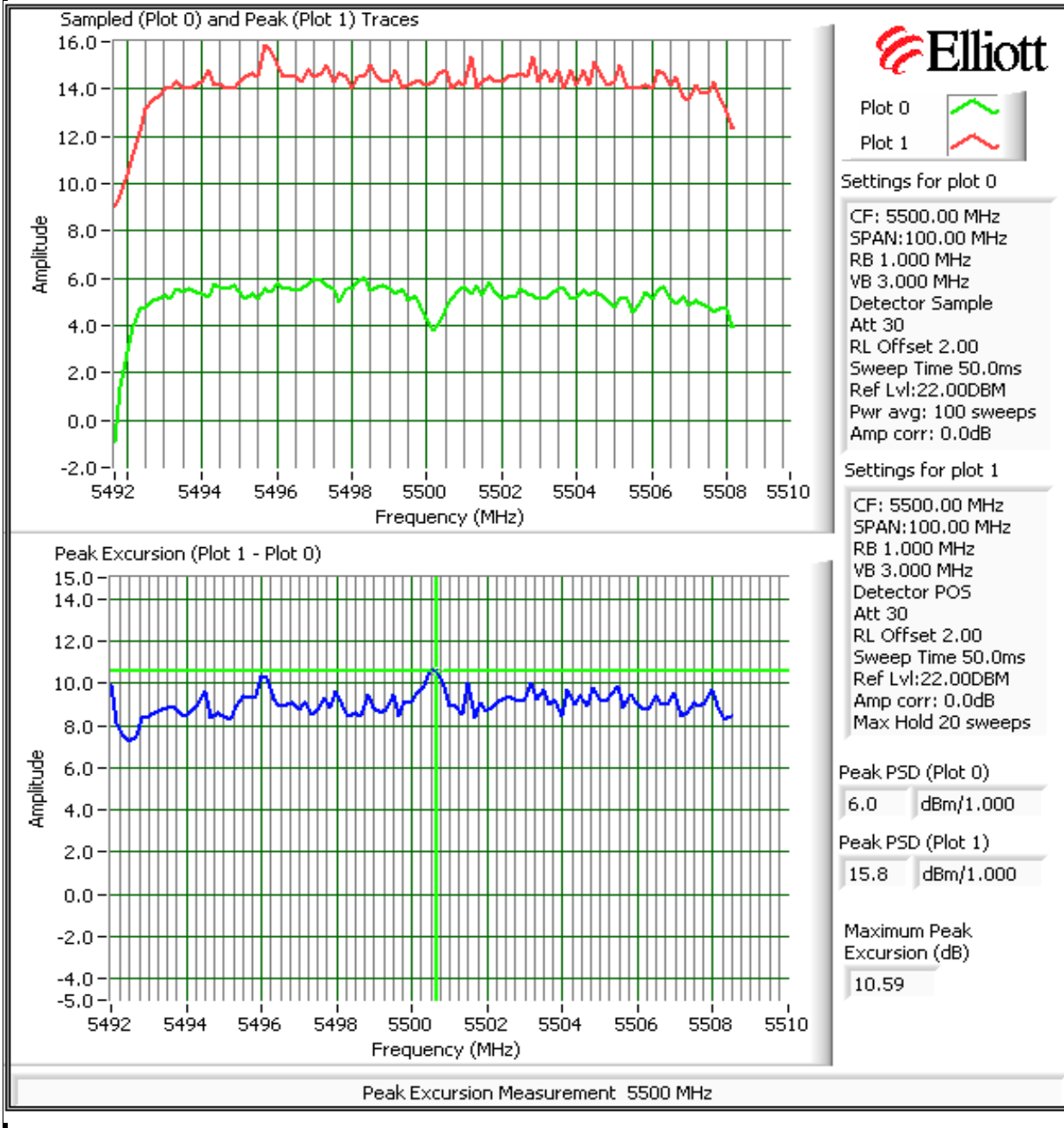
Cursor 1 5719.66; 12.33 Delta Freq. 38.50

Cursor 2 5681.16; -13.67 Delta Amplitude 26.00

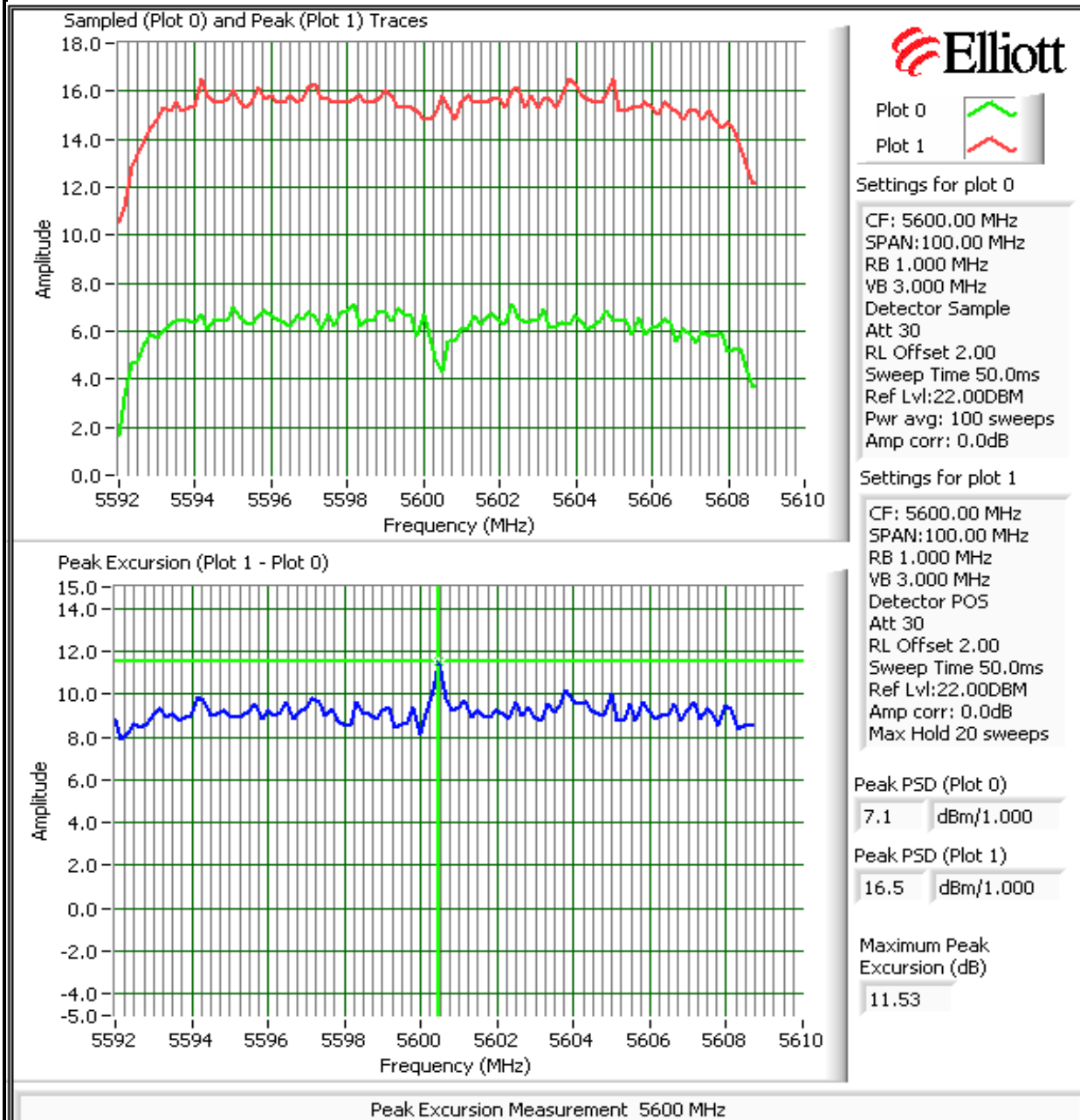
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Standard: FCC 15.401	Class: N/A

Run #2: Peak Excursion Measurement

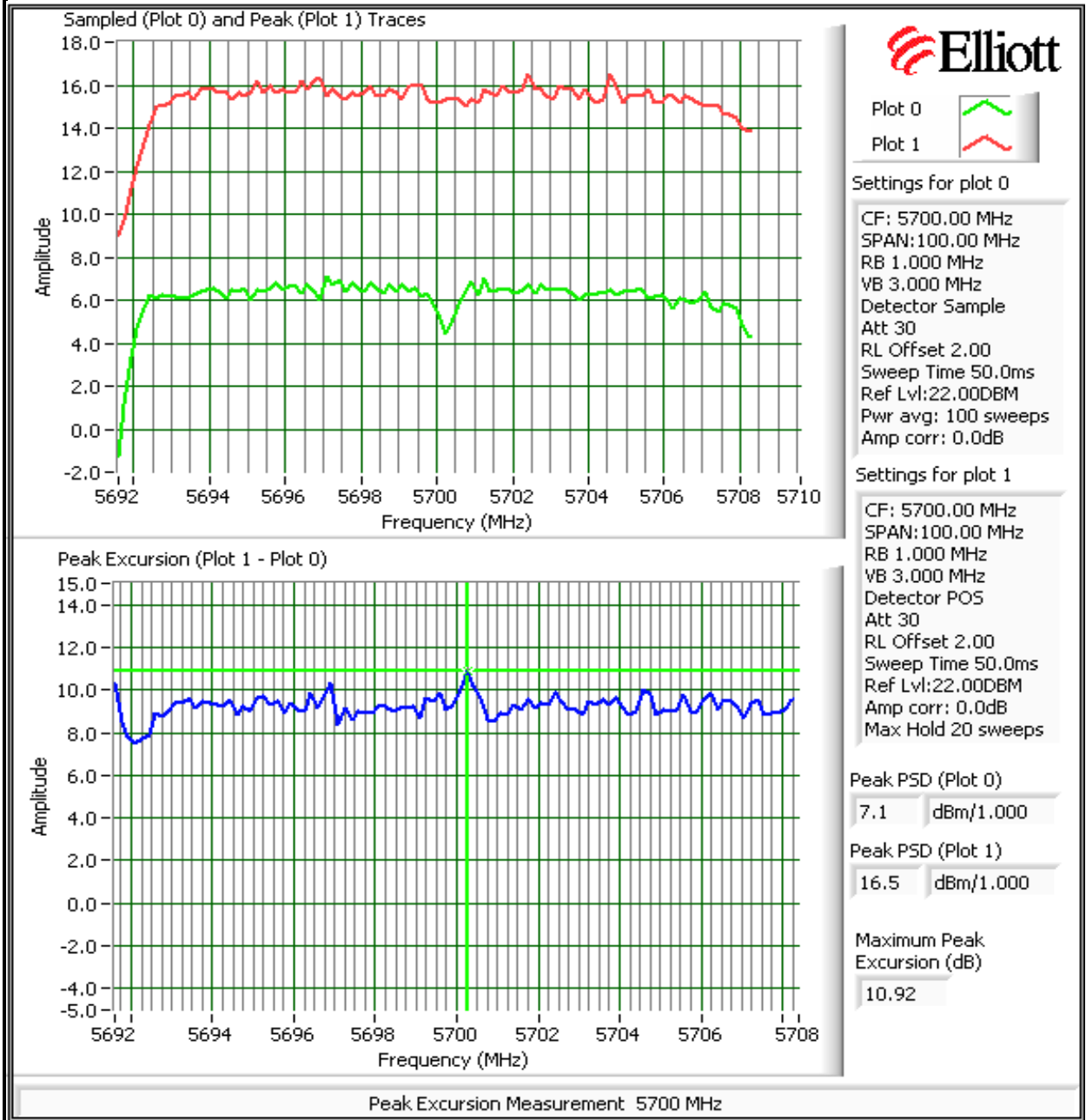
Plots Showing Peak Excursion
 Trace A: RBW = 1MHz VBW = 3MHz
 Trace B: Method #1



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Run #3: Out Of Band Spurious Emissions - Antenna Conducted

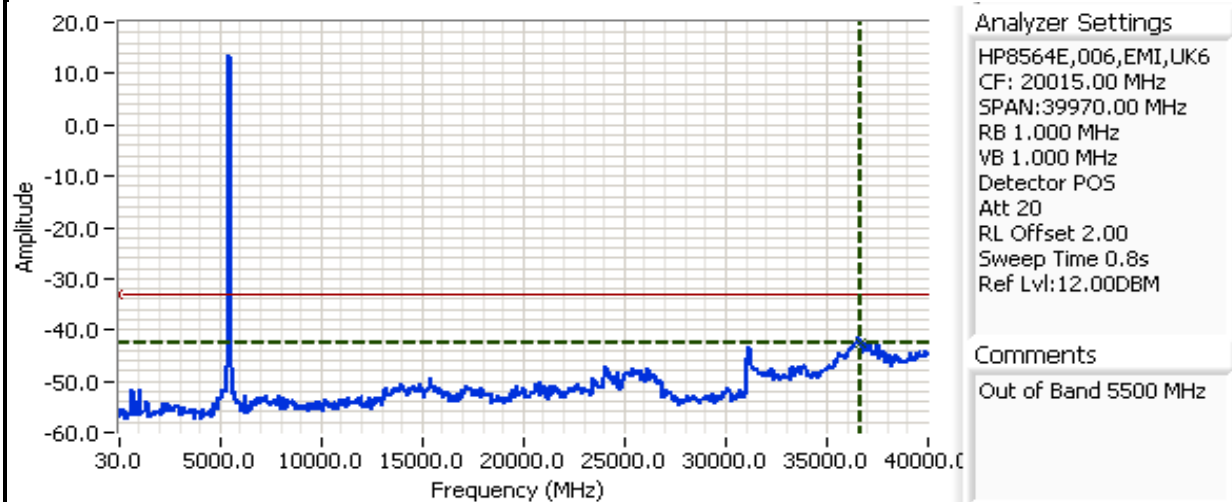
Maximum Antenna Gain: 6 dBi
 Spurious Limit: -27 dBm/MHz eirp
 Limit Used On Plots ^{Note 1}: -33 dBm/MHz

Note 1: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.

Note 2: All spurious signals below 1GHz are measured during digital device radiated emissions test.

Note 5: Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

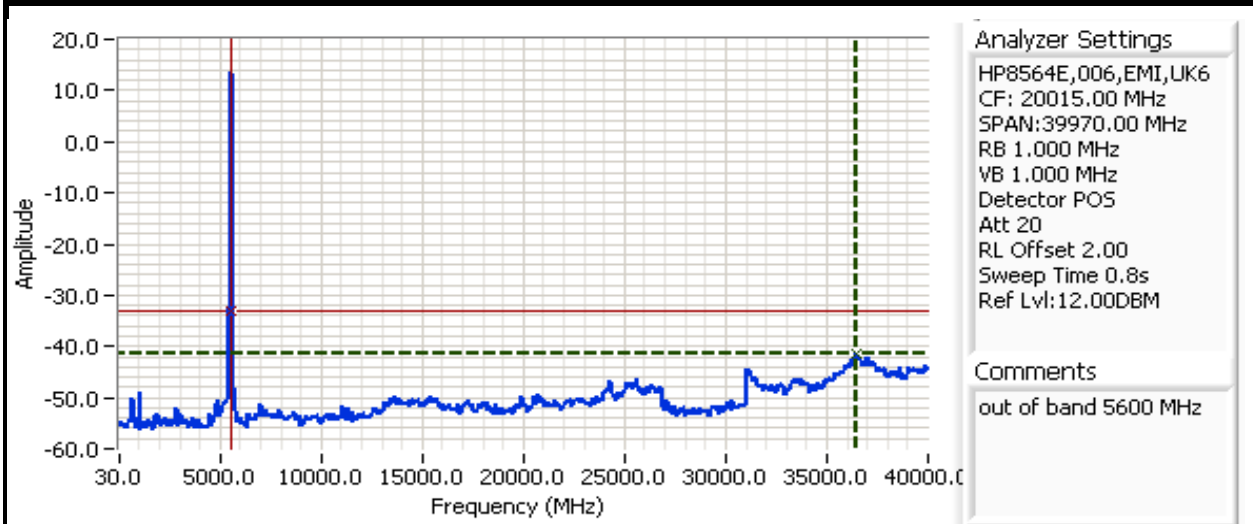


Analyzer Settings
 HP8564E,006,EMI,UK6
 CF: 20015.00 MHz
 SPAN:39970.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 20
 RL Offset 2.00
 Sweep Time 0.8s
 Ref Lvl:12.00DBM

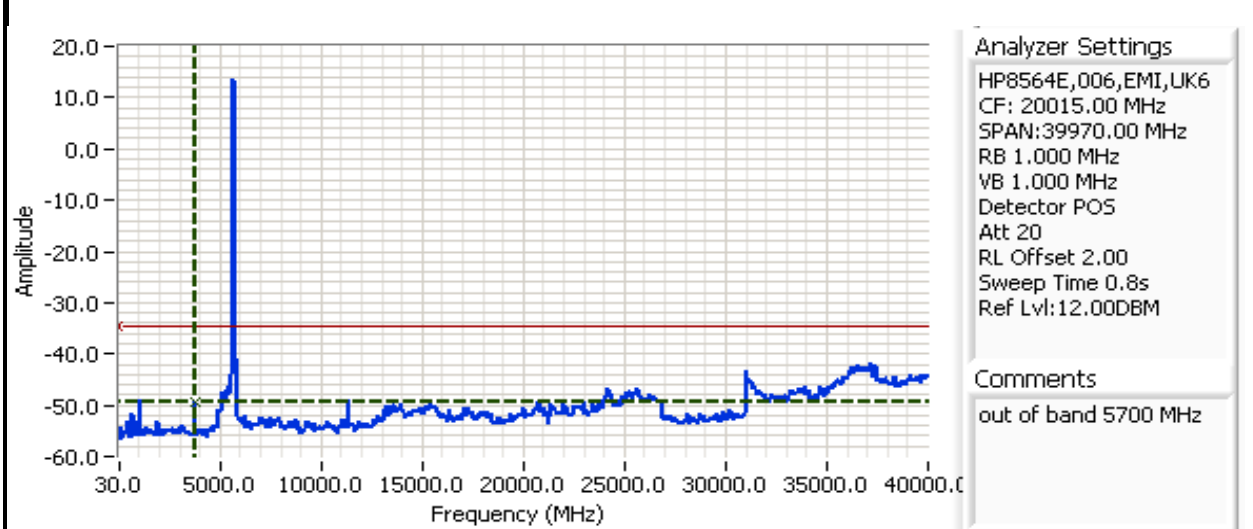
Comments
 Out of Band 5500 MHz

Cursor 1 36669.16 -42.67 Delta Freq. 36743.26
 Cursor 2 -74.089 -33.00 Delta Amplitude 9.67

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Cursor 1	36469.3	-41.33		Delta Freq.	30910.13	
Cursor 2	5559.18	-33.00		Delta Amplitude	8.33	



Cursor 1	3760.53	-49.33		Delta Freq.	3834.62	
Cursor 2	-74.089	-34.60		Delta Amplitude	14.74	